

FIG.1

DATA RECEPTION APPARATUS

RTP RECEPTION SECTION

RTCP TRANSMISSION SECTION

- 5 CONTROL INFORMATION TRANSMISSION/RECEPTION SECTION
SERVER

FIG.2

DATA RECEPTION APPARATUS

- 10 RTP RECEPTION SECTION

RTCP TRANSMISSION SECTION

CONTROL INFORMATION TRANSMISSION/RECEPTION SECTION
SERVER

15 FIG.3

10 DISTRIBUTION SERVER

20 WIRED NETWORK

30 GATEWAY

40 BASE STATION

- 20 50 MOBILE STATION

FIG.4

COMMUNICATION NETWORK

TRANSPORT LAYER PROTOCOL

- 25 NETWORK LAYER PROTOCOL

FIG.5

ADAPTIVE CONTROL IN MULTI-MEDIA REAL-TIME COMMUNICATION

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60    DETERMINE TRANSMISSION INTERVAL (FIXED INTERVAL OR
TOLERABLE MAXIMUM INTERVAL) OF RECEIVER REPORT PACKET DYNAMICALLY
BETWEEN DATA DISTRIBUTION SERVER AND RECEPTION TERMINAL
5  70    DATA DISTRIBUTION SERVER MONITOR RECEPTION CONDITIONS OF
RECEIVER REPORT PACKET SENT FROM RECEPTION TERMINAL IN UNIT OF
SET TIME INTERVAL
80    COMPARE NUMBER OF TIMES OF FAILED RECEPTIONS OF RECEIVER
REPORT PACKETS WITH ONE OR MORE THRESHOLD(S), AND IN ACCORDANCE
10 WITH THE COMPARISON RESULT, PERFORM ADAPTIVE CONTROL SUCH AS
CHANGING OF DATA TRANSMISSION RATE OR ENDING OF SESSION
END

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FIG. 6

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15 301  SERVER
302  CONTROL INFORMATION TRANSMISSION/RECEPTION SECTION
303  TCP TRANSMISSION/RECEPTION SECTION
311  COUNTER
310  TIMER
20 305  SENDER REPORT PACKET GENERATION SECTION
307  RTCP TRANSMISSION/RECEPTION SECTION
309  UDP TRANSMISSION/RECEPTION SECTION
306  MEDIA STORAGE SECTION
308  RTP TRANSMISSION SECTION
25 312  TRANSMISSION RATE ADJUSTMENT SECTION
313  SESSION DISCONNECTION SECTION
101 DATA RECEPTION APPARATUS

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- 102 CONTROL INFORMATION TRANSMISSION/RECEPTION SECTION
- 103 TCP TRANSMISSION/RECEPTION SECTION
- 104 RECEIVER REPORT TRANSMISSION INTERVAL DETERMINATION SECTION
- 5 105 RECEIVER REPORT PACKET GENERATION SECTION
- 107 RTCP TRANSMISSION/RECEPTION SECTION
- 109 UDP TRANSMISSION/RECEPTION SECTION
- 106 MEDIA PLAYBACK SECTION
- 108 RTP RECEPTION SECTION
- 10 200 COMMUNICATION NETWORK

FIG.7

DATA RECEPTION APPARATUS

RTP RECEPTION SECTION

- 15 RTCP TRANSMISSION SECTION
- CONTROL INFORMATION TRANSMISSION/RECEPTION SECTION
- SERVER
- COUNTER=0
- COUNTER=1
- 20 COUNTER=2
- TRANSMISSION INTERVAL=TRR-MAX-INT (ms)
- TRANSMISSION INTERVAL=TRR-MAX-INT (ms)

FIG.8

- 25 OPERATION AT SERVER SIDE
- ST10001 ACCEPT SETUP REQUEST
- ST10002 RECEIVE SET_PARAMETER

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                                trr-max-int=5000
ST10003      ACCEPT PLAYBACK REQUEST, START RTP PACKET
TRANSMISSION
ST10004      RECEIVE RECEIVER REPORT PACKET
5  ST10005      SET COUNTER=0
ST10006      START TIMER (t=0)
ST10007      RECEIVER REPORT PACKET RECEIVED?
ST10008      t>trr-max-int+α?
ST10009      INCREMENT COUNTER BY 1
10 ST10010      COUNTER=5?
ST10011      MINIMUM TRANSMISSION RATE?
ST10012      COUNTER=10?
ST10013      REDUCE RTP TRANSMISSION RATE
ST10014      END RTP PACKET TRANSMISSION
15 ST10015      ADJUST TRANSMISSION RATE

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FIG.9

RTSP REQUEST FROM DATA RECEPTION APPARATUS TO SERVER

20 FIG.10

RTSP RESPONSE FROM SERVER TO DATA RECEPTION APPARATUS

FIG.11

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301  SERVER
25 302  CONTROL INFORMATION TRANSMISSION/RECEPTION SECTION
303  TCP TRANSMISSION/RECEPTION SECTION
304  RECEIVER REPORT TRANSMISSION INTERVAL DETERMINATION

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|----|---|
| | SECTION |
| | 311 COUNTER |
| | 310 TIMER |
| | 305 SENDER REPORT PACKET GENERATION SECTION |
| 5 | 307 RTCP TRANSMISSION/RECEPTION SECTION |
| | 309 UDP TRANSMISSION/RECEPTION SECTION |
| | 306 MEDIA STORAGE SECTION |
| | 308 RTP TRANSMISSION SECTION |
| | 312 TRANSMISSION RATE ADJUSTMENT SECTION |
| 10 | 313 SESSION DISCONNECTION SECTION |
| | 101 DATA RECEPTION APPARATUS |
| | 202 CONTROL INFORMATION TRANSMISSION/RECEPTION SECTION |
| | 103 TCP TRANSMISSION/RECEPTION SECTION |
| | 204 RECEIVER REPORT TRANSMISSION INTERVAL DETERMINATION |
| 15 | SECTION |
| | 105 RECEIVER REPORT PACKET GENERATION SECTION |
| | 107 RTCP TRANSMISSION/RECEPTION SECTION |
| | 109 UDP TRANSMISSION/RECEPTION SECTION |
| | 106 MEDIA PLAYBACK SECTION |
| 20 | 108 RTP RECEPTION SECTION |
| | 200 COMMUNICATION NETWORK |

FIG.12

AUDIO/VIDEO COMMON INFORMATION

25 AUDIO INFORMATION

AUDIO DATA ADDITIONAL INFORMATION ACCORDING TO PRESENT INVENTION

VIDEO INFORMATION

VIDEO DATA ADDITIONAL INFORMATION ACCORDING TO PRESENT INVENTION